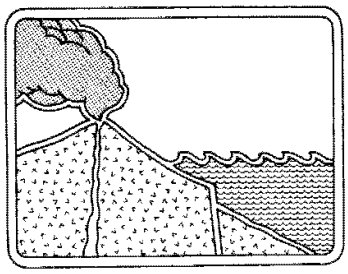
ISSN 8755-6839



SCIENCE OF TSUNAMI HAZARDS

The International Journal of The Tsunami Society

Volume 21 Number 3 Published Electronically 2003

P. O. Box 37970,
Honolulu, HI 96817, USA

WWW.STHJOURNAL.ORG

ASSESSING TSUNAMI HAZARD ALONG THE NEW ZEALAND COAST

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ABSTRACT

An assessment is made for tsunami hazards along the New Zealand coast by searching for long-wave resonances for the range of periods spanned by tsunami and short-period storm surges. To accomplish this, a high-resolution model of the southwest Pacific is used to simulate the effects of these waves in an oceanic domain extending over 40° in latitude and 50° in longitude. This paper describes the results of such a simulation for waves with a period in the range of 15 to 300 minutes. The locations where wave resonances occur are compared with historical and geological evidence in order to evaluate the concurrence of the locations. A search of geological data was undertaken, and the results of palaeotsunami studies were compared with model predictions to determine the general utility of using resonance patterns to assess tsunami hazards.

BASIC RELATIONS BETWEEN TSUNAMIS CALCULATION AND THEIR PHYSICS–II

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ABSTRACT

Basic tsunami physics of propagation and run-up is discussed for the simple geometry of a channel. Modifications of a numerical technique are suggested for the long-distance propagation and for the nonlinear processes in tsunami waves. The principal modification is application of the higher order of approximations for the first derivative in space. Presently, tsunami calculations employ the high resolution 2D and 3D models for generation and runup processes, while propagation is resolved by the regular 2D models. Such approach requires boundary conditions which will seamlessly connect the high resolution calculations to the propagation models. These conditions are described with the help of the method of characteristics.

CHEVRON-SHAPED ACCUMULATIONS ALONG THE COASTLINES OF AUSTRALIA AS POTENTIAL TSUNAMI EVIDENCES?

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ABSTRACT

Along the Australian coastline leaf- or blade-like chevrons appear at many places, sometimes similar to parabolic coastal dunes, but often with unusual shapes including curvatures or angles to the coastline. They also occur at places without sandy beaches as source areas, and may be truncated by younger beach ridges. Their dimensions reach several kilometers inland and altitudes of more than 100 m. Vegetation development proves an older age. Judging by the shapes of the chevrons at some places, at least two generations of these forms can be identified. This paper discusses the distribution patterns of chevrons (in particular for West Australia), their various appearances, and the possible genesis of these deposits, based mostly on the interpretations of aerial photographs.

Science of Tsunami Hazards, Volume 21, Number 3, page 174 (2003)